

Robert D. Hendrix

Petroleum Geologist

GEOLOGIST'S REPORT DRILLING TIME AND SAMPLE LOG

COMPANY **Murfin Drilling Co. Inc.**

LEASE **Walter Bros 1-6**

FIELD **3307fml & 5307fwi**

LOCATION **6 TWP 1 RGE 35**

COUNTY **Rawlins STATE Kansas**

CONTRACTOR **Murfin Drilling Co. Inc. Rig 2**

SPUD **10/24/2013 COMP 11/1/2013**

RTD **4:30 LTD 4:55**

MUD UP **3195 TYPE MUD Chemical**

SAMPLES SAVED FROM **3540' TO 11D**

DRILLING TIME KEPT FROM **3540' TO 11D**

SAMPLES EXAMINED FROM **3540' TO 11D**

GEOLOGICAL SUPERVISION FROM **3604'**

GEOLOGIST ON WELL **Robert D. Hendrix**

FORMATION TOPS

ANHYDRITE

NEVA

FORAKER

TOPEKA

OREAD

LANSING

STARK

BKC

ELEVATIONS

KB **3229'**

DF _____

GL **3218'**

Measurements Are All From **Kelly Bushing**

CASING

CONDUCTOR _____

SURFACE **8:58' at 263'**

PRODUCTION **5.12"**

ELECTRICAL SURVEYS

Power Energy Services

Geological Services

Robert D. Hendrix

3164 (491)

3164 (491)

3651 (429)

3763 (534)

3763 (534)

3763 (534)

4083 (854)

4187 (938)

4184 (935)

4398 (1173)

4434 (1225)

4430 (1221)

API# 15-153-20956

REMARKS:

LEGEND

	Anhydrite
	Sandstone
	Limestone
	Shale
	Carb Sh
	Cherty LS
	Chert
	Dolomite

DEPTH	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
3100			
50			Anhydrite 3164 (+65)
3200			Base Anhydrite 3192 (+37)
3500		Shale: red, silty	
50		Shale: red, white/lt green, soft, sandy, silty	
3600		Shale: red, silty	
50		Limestone: white, fxn, v-chalky, no vis por	
3600		Shale: red, gray, silty	
50		Shale: red, silty	Geologist on location 3604' at 1:37 am 10/27/2013
3700		Limestone: white to tan, f-mxn, chaly, oolitic in part, fossiliferous, no vis por	
50		Shale: red, silty, sl sandy	
3700		Sandstone: gray, friable, soft in part, v-fngr, md, well sorted, calcareous cmnt, no vis por	
50		Limestone: gray, fxn, fossiliferous, no vis por	Red Eagle 3715 (-486)
3800		Shale: red, gray, green, silty	
50		Limestone: white, f-mn, sl chalky, fossiliferous, no vis por, scattered dark sat stain, nfo, no odor	
3800		Limestone: white, f-mn, chalky, fossiliferous, no vis por	
50		Siltstone/Shale: gray, blocky, hard, silty, calcareous	
3800		Shale: red, gray, silty	
50		Limestone: tan to white, fxn, granular, sl fossiliferous, no vis por	
3800		Shale: red, gray, silty	
50		Shale: red, silty	
3900		Limestone: gray to tan, fxn, chalky, sl fossiliferous, no vis por	wt 8.9, vis, 60, lcm 2# Morgan Mud, Troy Vanpelt
50		Shale: gray, red, silty	
3900		Shale: red, silty	
50		Limestone: tan to white, fxn, silty, hard, no vis por	
3900		Shale: dark gray, green, red	
50		Limestone: white, f-fxn, v fossiliferous, no vis por	
3900		Shale: gray, green, red, soft, silty	
50		Limestone: white to gray, fxn, no vis por, spotty to sat dark stain, nfo, no odor	
3900		Limestone: tan to white, fxn, granular, fossiliferous, no vis por, ns	
50		Shale: gray, red, silty	
3900		Limestone: tan to white, f-mxn, fossiliferous, pr interxn por, 3 pieces spotty dark stain, nfo, no odor	
50		Limestone: tan to white, f-mxn, sl chalky, fossiliferous, no vis por	
3900		Limestone: tan to white, fxn, granular, sl fossiliferous, sl interxn por, 1 piece dark sat stain, silfo on break, no odor	
50		Shale: gray, red, silty	
4000		Limestone: tan to white, fxn, sl chalky, fossiliferous, no vis por	Topeka 3970 (-741)
50		Limestone: tan to white, fxn, dense, sl cherty, no vis por	
4000		Limestone: white to gray, fxn, dense, hard, fossiliferous, no vis por	
50		Shale: red, gray, silty	
4000		Limestone: gray to brown, fxn, silty, sl chalky, no vis por	
50		Limestone: white to brown, fxn, silty, sl chalky, no vis por	
4000		Shale: red, brown, silty	
50		Shale: red, brown, gray, silty	
4100		Limestone: white, f-mxn, chalky, fossiliferous, pr pp por, 3% sample dark sat stain, frsfo, fair odor	
4100		Limestone: white to tan, vf-fxn, chalky, dense, no vis por	
50		Limestone: white to lt gray, vf-fxn, sl chalky, dense, sl fossiliferous, no vis por	
4100		Limestone: tan to lt gray, vf-fxn, dense, no vis por	
50		Limestone: lt gray to gray, fxn, silty, no vis por	
4100		Shale: gray, green, some red, silty, hard	
50		Shale: gray, black, red, silty	8:00am, 10/28/2013 rig down three hours swivel repair
4100		Limestone: tan to white, fxn, sl chalky, no vis por	
50		Shale: gray, red, silty, pyritic	DST #1 MIS-RUN 4198-4243 Hit bridge near bottom tool stacked out and opened and blew water out of bucket. Slid 15' to bottom when on bottom there was no blow, roughly open 27 min. rec 1100 mud, ff: 633-634 psi pulled tool
4200		Limestone: tan, fxn, dense, sl fossiliferous, no vis por, 3 pieces dark tarry stain, nfo, no odor	
50		Limestone: tan, fxn, dense, sl fossiliferous, sl vug por, 1% sample dark tarry stain, nfo, no odor	wt 8.7, vis, 47, lcm 3# Morgan Mud, Troy Vanpelt
4200		Shale: red, gray, silty	
50		Sandstone: tan to red, soft, very shaly, fngm, md, mod sorted, no vis por, ns	
4200		Shale: red, gray, silty	
50		Limestone: tan to white, f-mxn, sl chalky, fossiliferous, fr interxn por, dark sat stain, frsfo, fair odor	
4200		Shale: gray, black, red	8:00am, 10/29/2013 Strap 1.01' long to board wt 9.1, vis, 43, lcm 2# Morgan Mud, Troy Vanpelt
50		Limestone: white, fxn, sl chalky, pyritic, fossiliferous, no vis por, lt spotty stain, nfo, no odor	
4200		Shale: red, brown, gray, silty	DST #2 4297-4364 30-60-90-90 1st open: bob 5 min 1st close: return built to 1 1/2" 2nd open: fair blow built to 9" 2nd close: wk surface return Rec: 114' osmw spots/50/50 124' osmw spots/10/90 124' mw 10/90 235' mw 5/95 5' heavy mud hydro: 2058-2012 psi ff: 25-257 psi ff: 259-294 psi sip: 294-294 psi bht: 126° F chl: 65000 ppm api rw: 0.142 @ 57°F
4300		Limestone: tan to gray, f-mxn, oolitic in part, fossiliferous, no vis por, 2 pieces black tarry stain, nfo, no odor	
50		Limestone: tan to green to purple, fxn, dense, no vis por, ns	
4300		Shale: gray, brown, purple, red, silty, blocky	
50		Shale: gray, black	DST #3 4297-4364 30-60-30-60 1st open: wk blow built to 1/4" to died in 21 min 2nd open: no blow Rec: 5' mud hydro: 2181-2108 psi ff: 33-34 psi ff: 36-37 psi sip: 192-109 psi bht: 124° F
4300		Limestone: tan, f-mxn, sl chalky, oolitic in part, fossiliferous, no vis por, 1% sample dark tarry stain, nfo, no odor	
50		Shale: gray, black, red, silty	8:00am, 10/30/2013 wt 9.1, vis, 55, lcm 2# Morgan Mud, Troy Vanpelt
4300		Limestone: white to tan, f-fxn, oolitic, fossiliferous, gd oolitic, 25% sample dark sat stain, frsfo, faint odor	
50		Limestone: white to tan, fxn, dense, no vis por, ns	
4300		Shale: gray, dark gray, red, silty	Stark 4398 (-1169) 8:00am, 10/31/2013 wt 9.4, vis, 47, lcm 3# Morgan Mud, Troy Vanpelt
50		Shale: gray, dark gray, red, silty	
4300		Limestone: white, f-mxn, oolitic in part, sl fossiliferous, no vis por, ns	
50		Shale: gray, red	DST #4 4361-4398 30-60-30-60 1st open: wk blow built to 1/4" to died in 10 min 2nd open: no blow Rec: 1' mud -w- oil spots hydro: 2133-2124 psi ff: 16-17 psi ff: 18-19 psi sip: 119-52 psi bht: 123° F
4300		Limestone: white to tan, fxn, chalky, sl fossiliferous, no vis por	
50		Limestone: tan, f-mxn, chalky, fossiliferous, no vis por	
4300		Shale: red, gray, silty	
50		Limestone: tan to gray, f-mxn, chalky, fossiliferous, no vis por	
4300		Limestone: tan to gray, fxn, chalky, sl fossiliferous, no vis por	
50		Shale: red, gray, silty	
4300		Limestone: white to lt gray, vf-fxn, sl chalky, dense, fossiliferous, no vis por	BKC 4450 (-1221)
50		Limestone: white to lt gray, vf-fxn, sl chalky, dense, fossiliferous, no vis por	
4300		Shale: red, gray, silty	
50		Limestone: white to lt gray, vf-fxn, sl chalky, dense, fossiliferous, no vis por	RTD 4550 (-1321) 8:00am, 11/1/2013 Geologist off location at 6:30am, 11/1/2013